

KEY TO THE GENERA OF ORIENTAL MYMARIDAE, WITH A
PRELIMINARY CATALOG (HYMENOPTERA : CHALCIDOIDEA)

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Abstract

The preliminary catalogue of Oriental Mymaridae, comprising India, Pakistan, Sri Lanka, Nepal, Burma, Kampuchia, Malaysia, Indonesia and Philippines is an up-to-date review. It includes 27 genera and 90 species. All available types have been examined and this has necessitated many generic transfers and specific synonymies. A key to genera with figures of species representative of the genera dealt with in the catalog is presented.

INTRODUCTION

Species of the family Mymaridae are world-wide in their distribution and some of these are the smallest known in nature. All the members of the family so far known are parasitic in habit and develop in the eggs of other insects, particularly of the Homoptera-Heteroptera, but also of Lepidoptera, Odonata, Coleoptera, Hemiptera and Psocids (Corrodentia). There are records of mymarids having been reared from coccids and aleurodids, but these records may in all probability involve misidentification of hosts. Mymarids have been successfully utilized in the biological control of insect pests of crops and orchard trees and the outstanding example is the control of *Gonipterus scutellatus* Gyllenhal in New Zealand and South Africa by the introduction and establishment of *Patasson nitens* (Girault).

The mymarids not only are cosmopolitan in distribution but are also in abundance. Yet these insects have not received the attention of entomologists in general, and taxonomists in particular, possibly because of their minute size and consequently not easily recognized and collected. Good tag mounts are difficult to make of mymarids, and if made are hardly suitable for taxonomic studies. It is necessary to prepare good micro slides for detailed studies.

Since Curtis described *Mymar* in 1832 over 140 genera with about 1250 species have been described and listed. However, only about 95 genera are recognized. Mani (1938) in his catalog of Indian Chalcidoidea included only 5 genera and 5 species. Since then many genera and species have been described and recorded by several Indian workers.

In this paper an effort has been made to bring together all the information available on the Mymaridae of the Oriental Region comprising India, Pakistan, Nepal, Burma, Sri Lanka and Malaysia. In compiling this catalog we have been able to examine the types of several Oriental species available to us through the courtesy of Dr. Grissell of the United States National Museum and others in the British Museum (Natural History). These studies have necessitated many generic transfers and some specific synonymies. However, in the

case of large genera such as *Camptoptera*, *Gonatocerus* and *Polynema*, and particularly those based only on males, it has not been possible to critically examine their specific validity. The catalog includes 27 genera and 90 species. The fauna being very rich in this region, there is no doubt that many more genera and species known will be brought to light in addition to new forms to science that will have to be described. It is hoped that the key to genera of the Oriental Region and the numerous figures of species appended will enable workers of the Region to recognize and classify the mymarids they are dealing with.

CLASSIFICATION

Mymarids were first treated as bona fide 'chalcids' as early as 1839 by Haliday who also regarded them as a 'family', Mymaridae. Later authors, such as Walker, Westwood and Foerster, regarded mymarids as Proctotrupoids. This view was nearly abandoned since Ashmead (1904) has shown their chalcid affinities.

Ashmead (1904) divided Mymaridae into two subfamilies, the pentamerous Gonatocerinae and the tetramerous Mymarinae, and each of these subfamilies into two tribes based upon the nature (mode) of attachment of the gaster with the propodeum. Tribes Gonatocerini (gaster sessile or subsessile) and Ooctonini (gaster petiolate) in Gonatocerinae, and Mymarini (gaster petiolate) and Anaphini (gaster sessile or subsessile) in Mymarinae. Girault (1911, 1912) in his earlier contributions on the North American and Australian mymarid fauna, followed Ashmead's classification, but in his privately printed paper (1929) dealing with the North American mymarids, considered the mode of attachment of the gaster with the propodeum more important and relegated the tarsal segments to tribal status. Thus he divided mymarids into two subfamilies: Mymarinae with convexly rounded, subsessile or petiolate gaster, and Alaptinae with truncately sessile gaster. Each one of these two subfamilies was further divided into two tribes based on the number of tarsal segments; tribes Mymarini (tetramerous) and Ooctonini (pentamerous) in Mymarinae, and Alaptini (pentamerous) and Anagrini (tetramerous) in Alaptinae.

Ghesquière (1942) considered mymarids as an intermediate group between Chalcidoidea and Proctotrupeoidea, gave them the status of a super-family, Mymaroidea, and recognized three families, Mymaridae, Lymaenonidae and Signiphoridae.

Debauche (1948) placed Mymaridae in Chalcidoidea, and recognized Lymaenonini and Mymarini as tribes of the family. He also proposed the family Mymarommidae for the genus *Mymaromma* Girault (= *Palaeomymar* (Meunier) which Girault (1920) did not assign to any tribe.

Anneck and Douth (1961) followed Girault (1929) except they included one more tribe, Anaphini, in the tetramerous Mymarinae. Yoshimoto, Kozlov and Trjapitzin (1972) proposed a third subfamily, Eubroncinae, for two genera, *Eubroncus* and *Stemmarotrum*, both characterized by peculiarly shaped head and enormously developed mandible. Nikol'skaja (1978) and Kozlov and Rasnitsyn (1979) considered *Palaeomymar* as belonging to the proctotrupoid family Serphitidae, the latter authors downgraded Mymarommidae (they spelled it as Mymarommatidae) to a subfamily Mymarommatinae in Serphitidae. They

further tried to show that mymarids are related more closely to Proctotrupeoidea than to Chalcidoidea.

In the present work, we have followed the classification of Girault (1929) although this system and that of Ashmead (1904) may not reflect natural affinities of the included genera. For this same reason we do not consider Anaphini *sensu* Annecke and Doutt (1961) a useful category. The subfamily Eubroncinae is also not accepted here since we consider the genera included in that subfamily as nothing more than anomalous members of Mymarinae. We, however, note that further detailed studies on the genera are needed to establish natural affinities and for a better system of classification.

The following abbreviations are used for the depositories given in the catalog:

- BMNH - British Museum (Natural History), London, England.
- BPBM - Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A.
- ECO - Entomology Collection, Ministry of Food and Agriculture, Ottawa, Canada.
- EUM - Entomological Laboratory, Faculty of Agriculture, Ehime University, Matsuyama, Japan.
- IARI - Division of Entomology, Indian Agricultural Research Institute, New Delhi, India.
- IEUN - Istituto di Entomologia Agraria dell'Universita di Napoli, Portici, Italy.
- HSPA - Division of Entomology, Hawaiian Sugar Planters' Association, Honolulu, Hawaii, U.S.A.
- MSNG - Museo di Storia Naturale, Geneva, Italy.
- MUN - Entomology Laboratory, Faculty of Agriculture, Meijo University, Nagoya, Japan.
- QMB - Queensland Museum, Brisbane, Australia.
- RNSS - Royal Norwegian Society Science Letters, Museum Trondheim.
- USNM - United States National Museum of Natural History, Washington D.C., U.S.A.
- ZSI - Zoological Survey of India, Calcutta, India.

Family MYMARIDAE Haliday

Mymares (Tribus) Haliday, 1833, Ent. Mag. 1: 341.

Mymaridae (Family) Haliday, 1839, Hym. Synop. p. 11.- Walker, 1846, Ann. Mag. Nat. Hist. 18: 49.- Ashmead, 1897, Proc. Ent. Soc. Wash. 4: 236.- Ashmead, 1904, Mem. Carnegie Mus. 1: 362.- Mani, 1938, Cat. Indian Ins. 23: 141.- Debauche, 1948, Mem. Mus. Hist. Nat. Belg. 108: 7.- Annecke & Doutt, 1961, Ent. Rev. Dept. Agric. Tech. Serv. Repb. S. Afr. No. 5: 2.- Peck, 1963, Can. Ent. Suppl. 30: 18.- Peck, Boucek & Hoffer, 1964, Mem. Ent. Soc. Canada No. 34: 112.- Graham, 1969, Bull. Ent. Mus. (Nat. Hist.) (Ent.) Suppl. No. 16: 12.- De Santis, 1979, Catalogo De Los Himenopteros Calcidoideos De America Al Sur De Los Estados Unidos: 360.- Burks, *In*: Krombein *et al.*, 1979, Catalog of Hymenoptera in North America North of Mexico, Vol. 1: 1022.

Mymarides (subfamily) Westwood, 1840, Intr. Modern Class. Ins. Vol. II, Synop. p. 78 (in family Proctotrupidae).

Mymaroidae Foerster, 1856, Hym. Stud. Heft. II: 20, 27, 116.

Mymaroidae (Superfamily) Ghesquiere, 1942, Rev. Zool.-Bot. Afr. 36: 319 (part).

Lymaenonidae Ghesquiere, 1942, Rev. Zool.-Bot. Afr. 36: 319.

Mymarommidae Debauche, 1948, Mem. Mus. Hist. Nat. Belg. 108: 7.

Mymarinae Schmiedeknecht, 1909, Gen. Ins. 97: 5, 488.

Gonatoceridae Mani & Saraswat, 1973, Mem. Sch. Ent. St. Johns' Coll. Agra No. 2: 78.

KEY TO HIGHER CATEGORIES AND ORIENTAL GENERA OF MYMARIDAE

1. Gaster broadly attached with the propodeum; mesopostphragma plainly projecting into the gaster (Figs. 8, 21) Subfamily Alaptinae 2
- Gaster convexly rounded at base, with a more or less distinct petiole; mesopostphragma not or hardly projecting into the gaster (Figs. 3, 4) Subfamily Mymarinae 3
2. Tarsi 4-segmented Tribe Anagrini 4
- Tarsi 5-segmented Tribe Alaptini 7
3. Tarsi 4-segmented Tribe Mymarini 13
- Tarsi 5-segmented Tribe Ooctonini 8
4. Antennal clava solid (Fig. 6); scutellum followed by a pair of distinctly separated plates (= postscutellum) (Fig. 8); male antenna 13-segmented *Anagrus* Haliday
- Antennal clava 2- or 3-segmented; postscutellum composed of a single plate 5
5. Clava 2-segmented (Fig. 10); body dorsoventrally flattened *Platypatasson* Ogloblin
- Clava 3-segmented 6
6. Clava with sutures strongly oblique (Fig. 13); body not flattened *Stethynium* Enock
- Clava with sutures perpendicular; body strongly flattened *Platystethynium* Ogloblin
7. Funicle 5-segmented (Fig. 15); scutellum and postscutellum not strongly sculptured; marginal vein short; hind margin of fore wing excised beneath the venation (Fig. 17); male antenna 10-segmented (Fig. 16) *Alaptus* Westwood
- Funicle 6-segmented (Fig. 19); scutellum and postscutellum strongly sculptured (Fig. 21); marginal vein long; hind margin of fore wing normally rounded (Fig. 20); male unknown *Litus* Haliday
8. Petiole short, wider than long (Fig. 3) 9
- Petiole at least as long as wide (Fig. 22) 10

9. Funicle 5-segmented, clava solid or apparently 2- or 3-segmented (Fig. 23); marginal vein greatly elongate, the venation extending to half or more the length of wing (Fig. 24) *Arescon* Walker
 Funicle 8-segmented, clava solid (Fig. 25); marginal vein not greatly elongate and venation not extending beyond basal third of wing (Fig. 29) *Gonatocerus* Nees
10. Funicle 8-segmented, antenna 11-segmented; propodeum with well-developed carinae (Fig. 22) *Ooctonus* Haliday
 Funicle 7-segmented; antenna 10-segmented; propodeum at most very weakly carinate 11
11. Second segment of funical normally developed, not anelliform
 *Eomymar* Perkins
 Second segment of funicle, in both sexes, anelliform, sometimes so small as to be overlooked (Figs. 30, 31) 12
12. Fore wing narrow and distinctly curved on both margins; stigmal vein short, less than half the length of marginal and with a truncate apex (Figs. 32-34) *Camptoptera* Foerster
 Fore wing comparatively broad, not at all curved; stigmal vein long, more than half the length of the marginal and narrowed at apex (Male only, female unknown) *Camptopteroides* Viggiani
13. Gaster subpetiolate or subsessile, or petiole distinctly wider than long (Figs. 40, 43, 48) 14
 Gaster distinctly petiolate, the petiole at least as long as wide, usually longer (Fig. 4) 19
14. Funicle 8-segmented, clava solid; propodeum and first segment of gaster with prodigiously developed carinae; each side of propodeum with a prodigiously branched seta *Ptilomyar* Annecke & Doutt
 Funicle 5- or 6-segmented; propodeum and first segment of gaster without such carinae and propodeum without such setae 15
15. Funicle 5-segmented, antenna 8-segmented (Fig. 35); hypopygium prominent, extending to apex of gaster; male antenna 12-segmented
 *Paralleloptera* Enock
 Funicle 6-segmented, antenna 9- or 10-segmented (Figs. 38, 42); other characters same or different 16
16. Clava 2-segmented (Fig. 38); male antenna 12-segmented (Fig. 39)
 *Patasson* Walker
 Clava solid 17
17. Hypopygium not prominent, not extending to apex of gaster; fore wing distinctly curved on both margins (as in *Camptoptera*, Figs. 32-34); male antenna 12-segmented *Eofoersteria* Mathot
 Hypopygium prominent, extending to apex of gaster (Fig. 43); fore wing broad, not curved; male antenna 13-segmented 18
18. Hind wing very broad (Fig. 46); propodeum elongate; at least as long as postscutellum; first segment of gaster strongly carinate on sides (Fig. 48); wings densely setose; metanotum not raised above level of propodeum *Erythmelus* Girault

- Hind wing narrow; propodeum shorter than postscutellum; first segment of gaster not carinate; metanotum raised above level of propodeum (Fig. 43); wings sparsely setose to subnudos *Erythmelus* Enock
19. Mandible long, as long as the length of face; head, in profile, triangular, with the frontovertex and face forming an acute angle; the space between antennal sockets with a subrectangular shelf-like structure *Eubroncus* Yoshimoto, Kozlov & Trjapitzin
- Mandible short, distinctly shorter than length of face; head, in profile, not acutely triangular, the frontovertex convex or flat, more or less convexly merging with face; space between antennal sockets without such structure 20
20. Hind wing abbreviated, filiform, or poorly developed, with only a few marginal cilia (Figs. 51-53); fore wing oar-shaped and distinctly petiolate (Fig. 50); scape long and medially constricted (Fig. 49) *Mymar* Curtis
- Hind wing neither abbreviated nor filiform; fore wing differently shaped, not distinctly petiolate 21
21. Hind leg with very long spine-like setae; hind coxa longer than petiole or mid femur (Fig. 55); fore wing with the discal setae arranged in curved and alternating strong and weaker rows (Fig. 56); last segment of funicle like a segment of clava (Fig. 54) . . *Narayanella* Subba Rao
- Hind leg without such long setae; hind coxa shorter than petiole or mid femur (Fig. 4); fore wing with the discal setae not arranged in curved rows (Figs. 58, 59); clava clearly differentiated from last funicle segment (Fig. 57) 22
22. Pro- and mesothoracic dorsum with gross, spine-like, blunt or indented setae (Fig. 4) 23
- Thoracic dorsum with short, normal setae 25
23. Propodeum with a mid-longitudinal furrow or canal *Himopolynema* Taguchi
- Propodeum without such canal or furrow 24
24. Propodeum with two keels converging above the petiolar insertion to form a more or less distinct process (Fig. 4); discal setae of fore wing often with enlarged bases (tormae); fore wing often banded (Figs. 58, 59) *Acmopolynema* Ogloblin
- Propodeum without keels; fore wing not banded . . *Chaetomymar* Ogloblin
25. Propodeum with two keels converging above the petiolar insertion to form a more or less distinct process; discal setae of fore wing often with enlarged bases; fore wing often banded *Acmopolynema* Ogloblin
- Propodeum with the keels absent or different; wing usually hyaline and discal setae normal 26
26. Scape with distinct scale-like structures; marginal vein thin; prothoracic spiracles placed mesad of normal position, on the line between pronotum and mesoscutum *Stephanodes* Enock
- Scape without scale-like structures; marginal vein thickened; prothoracic spiracles normally placed 27

27. Fore wing with two distinct rows of discal setae on basal half
 *Grangeriella* Soyka
 Fore wing with discal setae not arranged in only two rows on basal half
 *Polynema* Haliday

ACMOPOLYNEMA Ogloblin, 1946 *

Acmopolynema bagicha (Narayanan, Subba Rao & Kaur) **comb. nov.** - India:
 Delhi, Maharashtra, Tamil Nadu.

Polynema bagicha Narayanan, Subba Rao & Kaur, 1960: 886, M, F. Delhi,
 India (IARI).

Mymarilla deccana Mani & Saraswat, 1973: 109, F. Poona, India (USNM).
syn. nov.

Polynema indopeninsularis Mani & Saraswat, 1973: 119, M, F. Berijam,
 Kodaikanal Hills, India (USNM). **syn. nov.**

Polynema deccana (Mani & Saraswat): Subba Rao, 1976: 89.

Acmopolynema incognita (Narayanan, Subba Rao & Kaur) **comb. nov.** - India:
 Delhi.

Maidliella incognita Narayanan, Subba Rao & Kaur, 1960: 889, F. Delhi,
 India (IARI).

Polynema (Maidliella) incognita (Narayanan, Subba Rao & Kaur):
 Narayanan & Subba Rao, 1961: 667.

ALAPTUS Westwood, 1839

Synonyms: *Parvulinus* Mercet, 1912; *Metalaptus* Malenotti, 1917.

Alaptus delhiensis Mani - India: Delhi.

Alaptus delhiensis Mani, 1942: 160, F. New Delhi, India (IARI).

Alaptus magnanimus Annandale - India: West Bengal.

Alaptus magnanimus Annandale, 1909: 299, M. Calcutta, India (ZSI).

Alaptus ramakrishnai Mani - India: Tamil Nadu.

Alaptus ramakrishnai Mani, 1942, M=F. Coimbatore, India (IARI).

Host: (?) Mealybug on coconut.

ANAGROIDEA Girault, 1915

Anagroidea himalayana (Mani & Saraswat) **comb. nov.** - India: Himachal
 Pradesh.

Anaphes himalayanus Mani & Saraswat, 1973: 101, F. Kalotop, Dalhousie,
 India (USNM).

* Detailed citation to genera are not given here since most of these are available in Annecke & Doutt (1961) and for genera described after that date we have given the references.

F = Female. M = Male.

[Males described as belonging to this species by Mani & Saraswat (1973) actually belong to *Patasson*.]

ANAGRUS Haliday, 1833

Synonyms: *Pteratomus* Packard, 1864; *Packardiella* Ashmead, 1904; *Paranagrus* Perkins, 1905.

Anagrus columbi Perkins – India: Andhra Pradesh.

Anagrus columbi Perkins, 1905: 198, F. Ohio, U.S.A. (HSPA).

Host: *Sogatella furcifera* (Horwath).

Anagrus dalhousieanus Mani & Saraswat – India: Himachal Pradesh.

Anagrus dalhousieanus Mani & Saraswat, 1973: 104, F. Khajjar, Dalhousie, India (USNM).

Anagrus empoascae Dozier – India: Delhi.

Anagrus empoascae Dozier, 1932: 86, F. Damien, Haiti (USNM). Subba Rao, 1966: 189, F, M. Delhi.

Host: *Empoasca devastans* Distant.

Anagrus flaveolus Waterhouse – India: Orissa, Andhra Pradesh. Pakistan. Sri Lanka. West Malaysia, Philippines.

Anagrus flaveolus Waterhouse, 1913: 87, M, F. Trinidae (BMNH).

Host *Nilaparvata lugens* Stål.

Anagrus optabilis (Perkins) – Fiji. India: Andhra Pradesh, Orissa.

Paranagrus optabilis Perkins, 1905: 199, M. Queensland, Australia (HSPA), also Fiji.

Hosts: *Perkinsiella saccharicida* Kirkaldy; Brown plant hopper.

Anagrus osborni (Fullaway) – Philippines: Los Banos.

Paranagrus osborni Fullaway, 1919: 53, F, M. Los Banos, Philippines (BPBM).

Host: *Peregrinus maidis* (Ashmead).

Anagrus perforator (Perkins) – Fiji. India: Orissa. Philippines.

Paranagrus perforator Perkins, 1905: 199, F. Fiji (HSPA).

Host: *Nilaparvata lugens* Stål; *Tarophagus proserpina* (Kirkaldy).

ARESCON Walker, 1846

Synonyms: *Panthus* Walker, 1846; *Leimacis* Foerster, 1847; *Limacis* Foerster, 1856; *Xenomymar* Crawford, 1913; *Neurotes* Enock, 1914.

Arescon enocki (Subba Rao & Kaur) – India: Bihar, Delhi, Gujarat, Himachal Pradesh, Karnataka, Maharashtra.

Neurotes enocki Subba Rao & Kaur, 1959: 235, F. New Delhi, India (IARI).

Arescon enocki (Subba Rao & Kaur): Subba Rao, 1966: 187, F, M. distribution.

Host: Jassid eggs.

CAMPTOPTERA Foerster, 1856

Synonyms: *Stichothrix* Foerster, 1856; *Pterocclisis* Foerster, 1856; *Macrocamptoptera* Girault, 1910; *Congolia* Ghesquiere, 1942.

Camptoptera ambrae Viggiani – India: Tamil Nadu.

Camptoptera ambrae Viggiani, 1978b: 152, F. Kodaikanal, India (MSNG).

Camptoptera cloacae Taguchi – Philippines: Bohol Is.

Camptoptera cloacae Taguchi, 1972: 228, F. Longon, Bohol Is., Philippines (MUN).

Camptoptera concava Taguchi – Philippines: Bohol Is.

Camptoptera concava Taguchi, 1972: 225, F. Bilar, Bohol Is., Philippines (MUN).

Camptoptera longifuniculata Viggiani – India: Tamil Nadu.

Camptoptera longifuniculata Viggiani, 1978b: 153, F. Kodaikanal, India (MSNG).

Camptoptera okadomei Taguchi – Philippines: Bohol Is.

Camptoptera okadomei Taguchi, 1972: 224, F. Longon, Bohol Is., Philippines (MUN).

Camptoptera philippina Taguchi – Philippines: Bohol Is.

Camptoptera philippina Taguchi, 1972: 223, F. Longon, Bohol Is., Philippines (MUN).

Camptoptera protuberculata Viggiani – Sri Lanka:

Camptoptera protuberculata Viggiani, 1978b: 155, F. Mululla, Sri Lanka (MSNG).

Camptoptera sakaii Taguchi – Taiwan.

Camptoptera sakaii Taguchi, 1977b: 143, F. Pinting Hsien, Taiwan (MUN).

Camptoptera serenellae Viggiani – Sri Lanka:

Camptoptera serenellae Viggiani, 1978b: 151, M. Hakgala, Sri Lanka (MSNG).

Camptoptera taenia Taguchi – Philippines: Bohol Is.

Camptoptera taenia Taguchi, 1972: 225, M. Longon, Bohol Is., Philippines (MUN).

Camptoptera taiwana Taguchi – Taiwan.

Camptoptera taiwana Taguchi, 1977b: 144, F. Pinting Hsien, Taiwan (EUM).

Camptoptera tuberculata Viggiani – Sri Lanka:

Camptoptera tuberculata Viggiani, 1978b: 154, F. Ambagaswewa, Sri Lanka (MSNG).

Camptoptera vinea Taguchi – Philippines: Bohol Is.

Camptoptera vinea Taguchi, 1972: 227, M. Longon, Bohol Is., Philippines (MUN).

CAMPTOPTEROIDES Viggiani, 1974

Camptopteroides armata Viggiani - Sri Lanka:

Camptopteroides armata Viggiani, 1974: 24, M. Hatton, Sri Lanka (MSNG).

CHAETOMYMAR Ogloblin, 1946

Chaetomymar elisabethae (Ferriere) comb. nov. - Java.

Polynema elisabethae Ferriere, 1931: 294, F. Buitenzorg, Java (BMNH).

Host: *Euproctus flexuosa* Snell.

Chaetomymar tayalum Taguchi - Taiwan.

Chaetomymar tayalum Taguchi, 1957b: 113, F. Fenchihu, Chiaie Hsien, Taiwan (EUM).

CLERUCHUS Enock, 1909

Sp. indet Malaysia, Johore.

Host: *Callimerus arufer*.

EOFOERSTERIA Mathot, 1966

Eofoersteria secunda Viggiani - India: Tamil Nadu.

Eofoersteria secunda Viggiani, 1978a: 39, F. Kodaikanal, India (MSNG).

EOMYMAR Perkins, 1912

Eomymar muiri Perkins - Java.

Eomymar muiri Perkins, 1912: 27, F. Pekalongan, Java (BPBM).

Host: Delphacid, probably

ERYTHMELUS Enock, 1909

Synonym: *Enaesius* Enock, 1909.

Erythmelus empoascae Subba Rao - India: Delhi.

Erythmelus empoascae Subba Rao, 1966: 192, M, F. Delhi, India (IARI).

Host: *Empoasca devastans* Distant.

Erythmelus helopeltidis Gahan - India: Andhra Pradesh, Uttar Pradesh. Malaysia: Kuala Lumpur.

Erythmelus heopeltidis Gahan, 1949: 75, M, F. Kuala Lumpur, Malaysia (USNM). Subba Rao, 1970: 662, F. India.

Hosts: *Helopeltis cinchonae* Mann., *Ophiomyia lantanae*.

EUBRONCUS Yoshimoto, Kozlov & Trjapitzin, 1972

Eubroncus orientalis Yoshimoto, Kozlov & Trjapitzin - Malaysia: Selangor.

Eubroncus orientalis Yoshimoto, Kozlov & Trjapitzin, 1972: 880, M.
Selangor, Malaysia (ECO).

GONATOCERUS Nees, 1834

Synonyms: *Lymaenon* Walker, 1846;

Rachistus Foerster, 1847; *Cosmocomoidea* Howard, 1908;

Oophilus Enock, 1909; *Agonatocerus* Girault, 1913;

Gonatoceroidea Girault, 1913; *Gastrogonatocerus* Ogloblin, 1935.

Gonatocerus bakrotus Mani & Saraswat - India: Himachal Pradesh.

Gonatocerus bakrotus Mani & Saraswat, 1973: 80, F. Dalhousie, India (USNM).

Gonatocerus berijamus Mani & Saraswat - India: Tamil Nadu.

Gonatocerus berijamus Mani & Saraswat, 1973: 82, M, F. Anamalai Hills,
India (USNM).

Gonatocerus bifasciiventris Girault - Java.

Gonatocerus bifasciiventris Girault, 1917: 134, M, F. Java (?USNM).

Host: 'Eggs of a leaf-hopper embedded in the leaves of sugar-cane.'

Gonatocerus brevifuniculatus Subba Rao - Indonesia: East Sumatra. Pakistan: Hyderabad.

Gonatocerus brevifuniculatus Subba Rao, 1970: 664, M, F. Hyderabad,
Pakistan (BMNH), also East Sumatra.

Host: ?Scale on *Albizia* sp.

Gonatocerus delhiensis (Narayanan & Subba Rao) **comb. nov.** - India: Delhi.

Lymaenon delhiensis Narayanan & Subba Rao, 1961: 659, F. Delhi, India
(IARI).

Gonatocerus devikulamus Mani & Saraswat - India: Tamil Nadu.

Gonatocerus devikulamus Mani & Saraswat, 1973: 84, F. Berijam, Anamalai
Hills, India (USNM).

Gonatocerus devitatakus Mani & Saraswat - India: Tamil Nadu.

Gonatocerus devitatakus Mani & Saraswat, 1973: 86, F. Devikulam,
Anamalai Hills, India (USNM).

Gonatocerus empoascae (Subba Rao) **comb. nov.** - India: Punjab.

Lymaenon empoascae Subba Rao, 1966: 195, F. Jullunder, India (IARI).

Host: *Empoasca devastans* Distant.

Gonatocerus indicus (Subba Rao & Kaur) **comb. nov.** - India: Delhi.

Lymaenon indicus Subba Rao & Kaur, 1959: 229, M, F. New Delhi, India
(IARI).

Gonatocerus kanheriensis Mani & Saraswat - India: Maharashtra.

Gonatocerus kanheriensis Mani & Saraswat, 1973: 87, F. Bombay, India (USNM).

Gonatocerus longicrus Kieffer - India: Orissa.

**Gonatocerus longicrus* Kieffer, 1913: 201, M.

Gonatocerus lucidus Dodd - Java.

Gonatocerus lucidus Dodd, 1919: 161, M, F. Tjibodas, Java (BMNH).

Gonatocerus munnarus Mani & Saraswat - India: Tamil Nadu.

Gonatocerus munnarus Mani & Saraswat, 1973: 89, F. Munnar, Anamalai Hills, India (USNM).

Gonatocerus narayani (Subba Rao & Kaur) **comb. nov.** - India: Delhi.

Lymaenon narayani Subba Rao & Kaur, 1959: 227, F. Delhi, India (IARI).

Gonatocerus nigriodes (Narayanan & Subba Rao) **comb. nov.** - India: Delhi.

Lymaenon nigrioides Narayanan & Subba Rao, 1961: 656, F. Delhi, India (IARI).

Gonatocerus pahlgamensis (Narayanan) **comb. nov.** - India: Jammu & Kashmir.

Lymaenon pahlgamensis Narayanan, 1961: 25, F. Kashmir, India (IARI).

Host: ?*Quadraspidiotus perniciosus* (Comstock).

Gonatocerus ramakrishnai (Subba Rao & Kaur) **comb. nov.** - India: Delhi.

Lymaenon ramakrishnai Subba Rao & Kaur, 1959: 232, M, F. Delhi, India (IARI).

Gonatocerus relictus Mani & Saraswat - India: Tamil Nadu.

Gonatocerus relictus Mani & Saraswat, 1973: 90, M, F. Berijam, Anamalai Hills, India (USNM).

Gonatocerus sahadevani (Subba Rao & Kaur) **comb. nov.** - India: Delhi.

Lymaenon sahadevani Subba Rao & Kaur, 1959: 231, F. Delhi, India (IARI).

Gonatocerus sarawakensis Sveum, Malaysia, Borneo, Sarawak.

Gonatocerus sarawakensis Sveum, 1981: 81, M, F. Semengo-Soult & Kuching (RNSS).

Gonatocerus shasthryi (Subba Rao & Kaur) **comb. nov.** - India: Karnataka.

Lymaenon shasthryi Subba Rao & Kaur, 1959: 234, M, F. Mandya, India (IARI).

Host: *Tettigonella spectra* (Distant).

Gonatocerus tamilanus Mani & Saraswat - India: Tamil Nadu.

Gonatocerus tamilanus Mani & Saraswat, 1973: 93, M, F. Madras, India (USNM).

*Type depository not traced.

Gonatocerus tarae (Narayanan & Subba Rao) **comb. nov.** – India: Delhi.

Lymaenon tarae Narayanan & Subba Rao, 1961: 657, F. Delhi, India (IARI).

Gonatocerus udakamandus Mani & Saraswat – India: Tamil Nadu.

Gonatocerus udakamandus Mani & Saraswat, 1973: 96, F. Ootacamund, India (USNM).

Gonatocerus uttarodeccanus Mani & Saraswat – India: Tamil Nadu.

Gonatocerus uttarodeccanus Mani & Saraswat, 1973: 97, M, F. Munnar, Palghat, India (USNM).

GRANGERIELLA Soyka, 1956

Grangeriella indochinensis Soyka – Campuchia (Saigon).

Grangeriella indochinensis Soyka, 1956: 18, F. Saigon, Ho Chi Min (Soyka's coll.)

HIMOPOLYNEMA Taguchi, 1977

Himopolynema malayanum Taguchi – Malaysia.

Himopolynema malayanum Taguchi, 1977a: 139, M. Tanah Rata, West Malaysia (MUN).

Himopolynema parviscutum Taguchi – Taiwan.

Himopolynema parviscutum Taguchi, 1977a: 140, M. Roushing Spa, Taiwan (EUM).

Himopolynema taiwanum Taguchi – Taiwan.

Himopolynema taiwanum Taguchi, 1977a: 142, M. Kenting Park, Taiwan (EUM).

LITUS Haliday, 1833

Litus enocki Howard – Sri Lanka.

Litus enocki Howard, 1896: 643, F. Pundaulya, Sri Lanka (USNM).

Host: ?*Eriococcus* sp.

MYMAR Curtis, 1832

Synonyms: *Pterolinononyktera* Malac, 1943; *Oglobliniella* Soyka, 1946.

Mymar schwanni Girault – India: Uttar Pradesh.

Mymar schwanni Girault, 1912: 166, F. Victoria, Australia (QMB). Verma, 1980: 536, F. Aligarh.

Mymar taprobanicum Ward – Widely distributed throughout the Oriental Region.

Mymar taprobanicum Ward, 1875: 197, F. Sri Lanka * (Type locality?). Taguchi, 1975a: 22, Taiwan. Subba Rao, 1976: 89, synonymy. Hayat, 1977: 283, F, Jodhpur.

* Type depository not traced.

Mymarilla taprobanicum (Ward): Mani, 1938: 143.

Mymar indica Mani, 1942: 160, M. Delhi, India (IARI). Mani & Saraswat, 1973: 107, M. Coimbatore.

Host: Associated with thrips. [In Japan one female bred from Fallen.]

NARAYANELLA Subba Rao, 1976

Synonym: *Narayana* Subba Rao, 1976; not *Narayana* Distant, 1908.

Narayanella pilipes (Subba Rao) - Burma.

Narayana pilipes Subba Rao, 1976a: 88, M, F. Burma (BMNH).

Narayanella pilipes (Subba Rao): Subba Rao, 1976b: 352.

Narayanella thornypoda (Narayanan & Subba Rao) - India: Bihar, Karnataka, Maharashtra.

Polynema (*Polynema*) *thornypoda* Narayanan & Subba Rao, 1961: 665, M. Balehonnur, India (IARI).

Anagrus khandalus Mani & Saraswat, 1973: 105, F. Bombay, India (USNM).
Saraswat & Mukerjee, 1975: 62, F. Ranchi.

Narayana thornypoda (Narayanan & Subba Rao): Subba Rao, 1976a: 89, synonymy.

Narayanella thornypoda (Narayanan & Subba Rao): Subba Rao, 1976b: 352.

OOCTONUS Haliday, 1833

Synonym: *Sphecomicrus* Walker, 1846.

Ooctonus kodainus Mani & Saraswat - India: Tamil Nadu.

Ooctonus kodainus Mani & Saraswat, 1973: 78, F. Anamalai, India (USNM).

PARALLELAPTERA Enock, 1909

Synonym: *Anthemiella* Girault, 1911.

Sp. indet: India, Karnataka, Bangalore.

Host: *Dictyla* sp., *Teleonemia scrupulosa* on *Lanтана camera*.

PATASSON Walker, 1846

Synonyms: *Anaphoidea* Girault, 1915; *Anaphoides* Enock, 1915; *Yungaburra* Girault, 1915; *Hofenderia* Soyka, 1949; *Fulmekiella* Soyka, 1949; *Schizophragma* Ogloblin, 1949.

Sp. indet. India: Uttar Pradesh, Himachal Pradesh.

PLATYPATASSON Ogloblin, 1946

Platypatasson fransseni Ogloblin - Indonesia (Java).

Platypatasson fransseni Ogloblin, 1946: 293, F. Java (USNM).

PLATYSTETHENIUM Ogloblin, 1946**Platystethenium onomarchicidum** Ogloblin - Indonesia (Java).*Platystethenium onomarchicidum* Ogloblin, 1946: 291, F. Java (USNM).**POLYNEMA** Haliday, 1833

Synonyms: *Eutriche* Nees, 1834; *Callitriche* Agassiz, 1848; *Cosmocomma* Foerster, 1856; *Valkerella* Westwood, 1878; *Walkerella* Westwood, 1883; *Maidliella* Soyka, 1946; *Novickyella* Soyka, 1946.

Polynema ahlaensis Mani & Saraswat - India: Himachal Pradesh.*Polynema ahlaensis* Mani & Saraswat, 1973: 111, F. Dalhousie, India (USNM).**Polynema anamalaiensis** Mani & Saraswat - India: Tamil Nadu.*Polynema anamalaiensis* Mani & Saraswat, 1973: 113, M. Palghat, India (USNM).**Polynema anantanagana** Narayanan - India: Jammu & Kashmir.*Polynema anantanagana* Narayanan, 1961: 24, F. Anantnag, India (IARI).Host: ? *Quadraspidiotus perniciosus* (Comstock).**Polynema crassa** Mani & Saraswat - India: Himachal Pradesh.*Polynema crassa* Mani & Saraswat, 1973: 114, M. Dalhousie, India (USNM).**Polynema dhenkunda** Mani & Saraswat - India: Himachal Pradesh.*Polynema dhenkunda* Mani & Saraswat, 1973: 116, M, F. Dhenkund, Dalhousie, India (USNM).**Polynema indica** Narayanan & Subba Rao - India: Delhi.*Polynema (Polynema) indica* Narayanan & Subba Rao, 1961: 663, F. Delhi, India (IARI).**Polynema kalatopensis** Mani & Saraswat - India: Himachal Pradesh.*Polynema kalatopensis* Mani & Saraswat, 1973: 122, M. Kalatop, Dalhousie, India (USNM).**Polynema kamathi** Mani & Saraswat - India: Himachal Pradesh.*Polynema kamathi* Mani & Saraswat, 1973: 123, F. Dalhousie, India (USNM).**Polynema loriger** Kieffer - Philippines.*Polynema loriger* Kieffer, 1916: 290, M. Luzon, Philippines, type depository not traced.**Polynema mendeli** Girault - Queensland, Australia.*Polynema mendeli* Girault, 1913: 118, M, 99 F. Nelson (Cairns) (QMB).*Polynema oophaga* Subba Rao, 1970: 666, F, M. Malaysia (BMNH).

Host: Tettigoniid eggs on Paddy.

Polynema orientalis (Narayanan, Subba Rao & Kaur) - India: Delhi.

Maidliella orientalis Narayanan, Subba Rao & Kaur, 1960: 888, M, F. Delhi, India (IARI).

Polynema (*Maidliella*) *orientalis* (Narayanan, Subba Rao & Kaur): Narayanan & Subba Rao, 1961: 667.

Polynema robusta Sveum - Malaysia, Indonesia.

Polynema robusta Sveum, 1981: 84, F. Pandu, Malaysia (RNSS).

Polynema truncata Narayanan & Subba Rao - India: Delhi.

Polynema (*Polynema*) *truncata* Narayanan & Subba Rao, 1961: 664, F. Delhi, India (IARI).

PTILOMYMAR Annecke & Doutt, 1961

Ptilomymar besucheti Viggiani - Sri Lanka.

Ptilomymar besucheti Viggiani, 1974: 27, M, F. Mahaweli Ganga, near Kandy, Sri Lanka (MSNG).

Ptilomymar orientalis Taguchi - Philippines: Bohol Is.

Ptilomymar orientalis Taguchi, 1972: 229, M. Longon, Bohol Is., Philippines (MUN).

STEPHANODES Enock, 1909

Stephanodes imbricatus (Narayanan & Subba Rao) **comb. nov.** - India: Delhi.

Polynema (*Stephanodes*) *imbricatus* Narayanan & Subba Rao, 1961: 667, F. Delhi, India (IARI).

Stephanodes orientalis Taguchi - Taiwan.

Stephanodes orientalis Taguchi, 1978: 73, M, F. Ishihara near Fukuoka, Japan (EUM), also Taiwan.

STETHYNIUM Enock, 1909

Stethynium empoascae Subba Rao - India; Delhi.

Stethynium empoascae Subba Rao, 1966: 189, M, F. Delhi, India (IARI).

Host: *Empoasca devastans* Distant.

ACKNOWLEDGMENTS

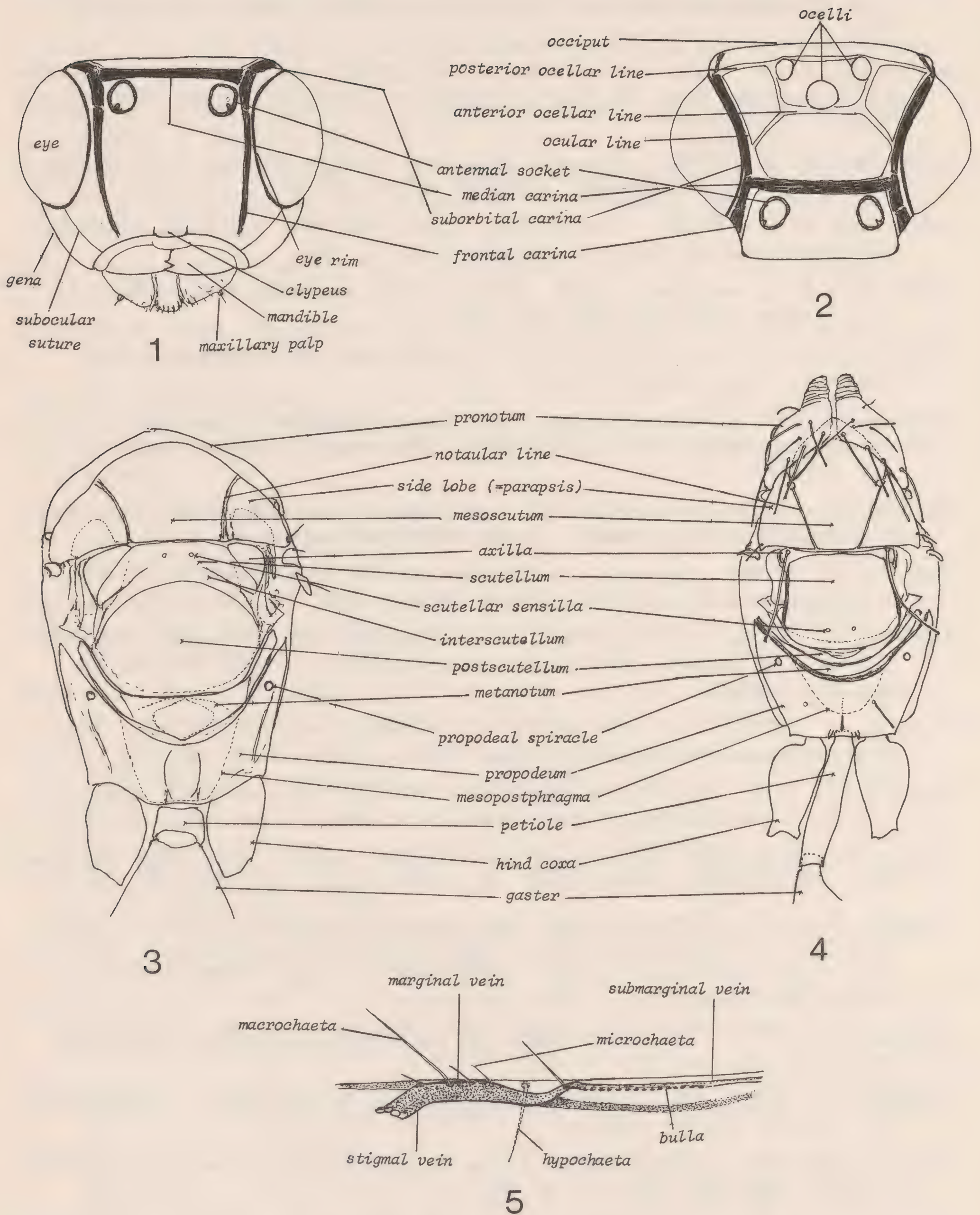
One of us (M. Hayat) is thankful to the Trustees of the British Museum (Natural History), London, and Dr. L. A. Mound, Keeper of Entomology, BMNH, for permission to study the Museum collections and for necessary facilities. He is thankful to the Royal Society and the Commonwealth Foundation, London, for financial assistance during the study period (July 1981 - June 1982) at the BMNH.

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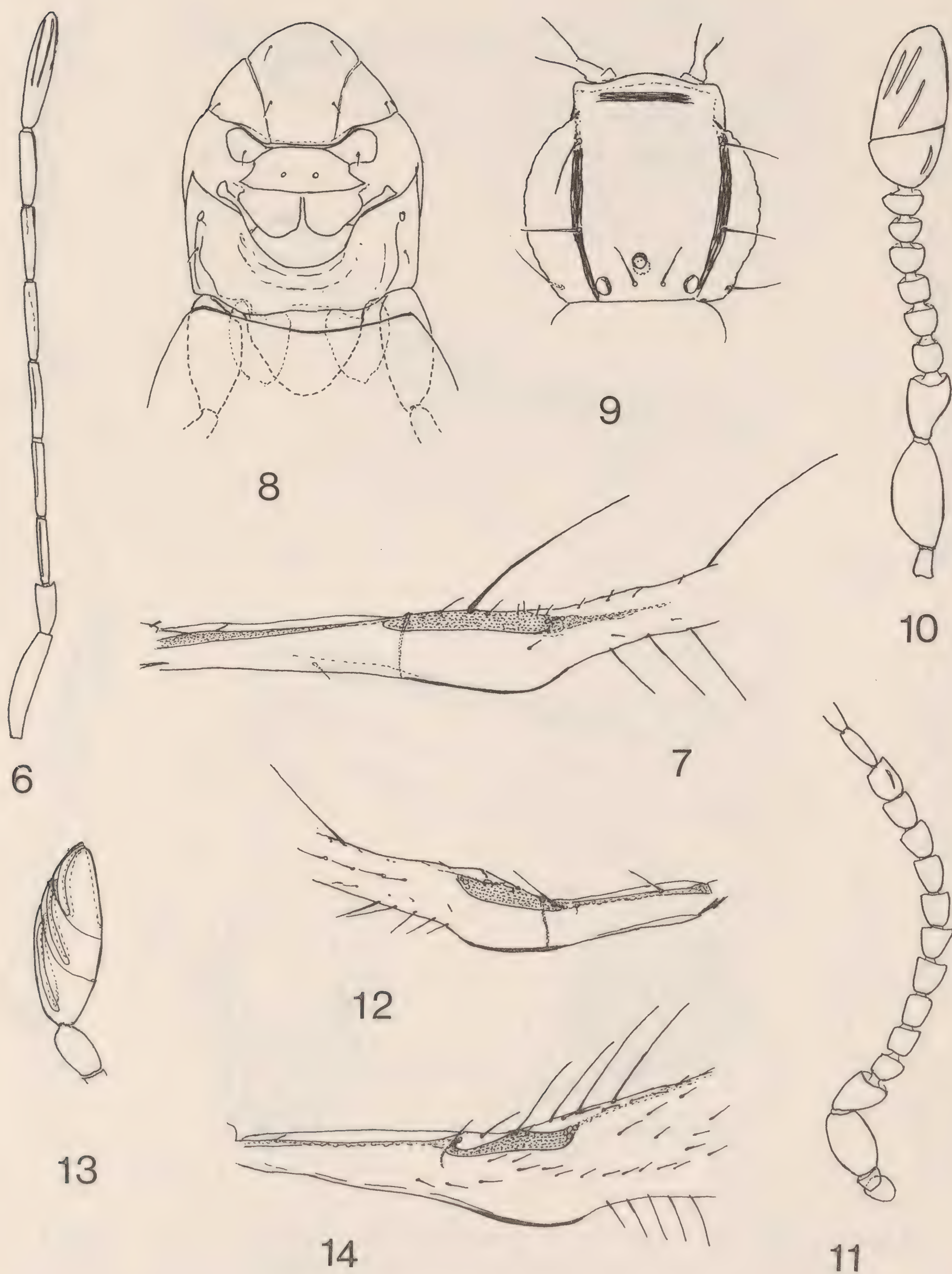
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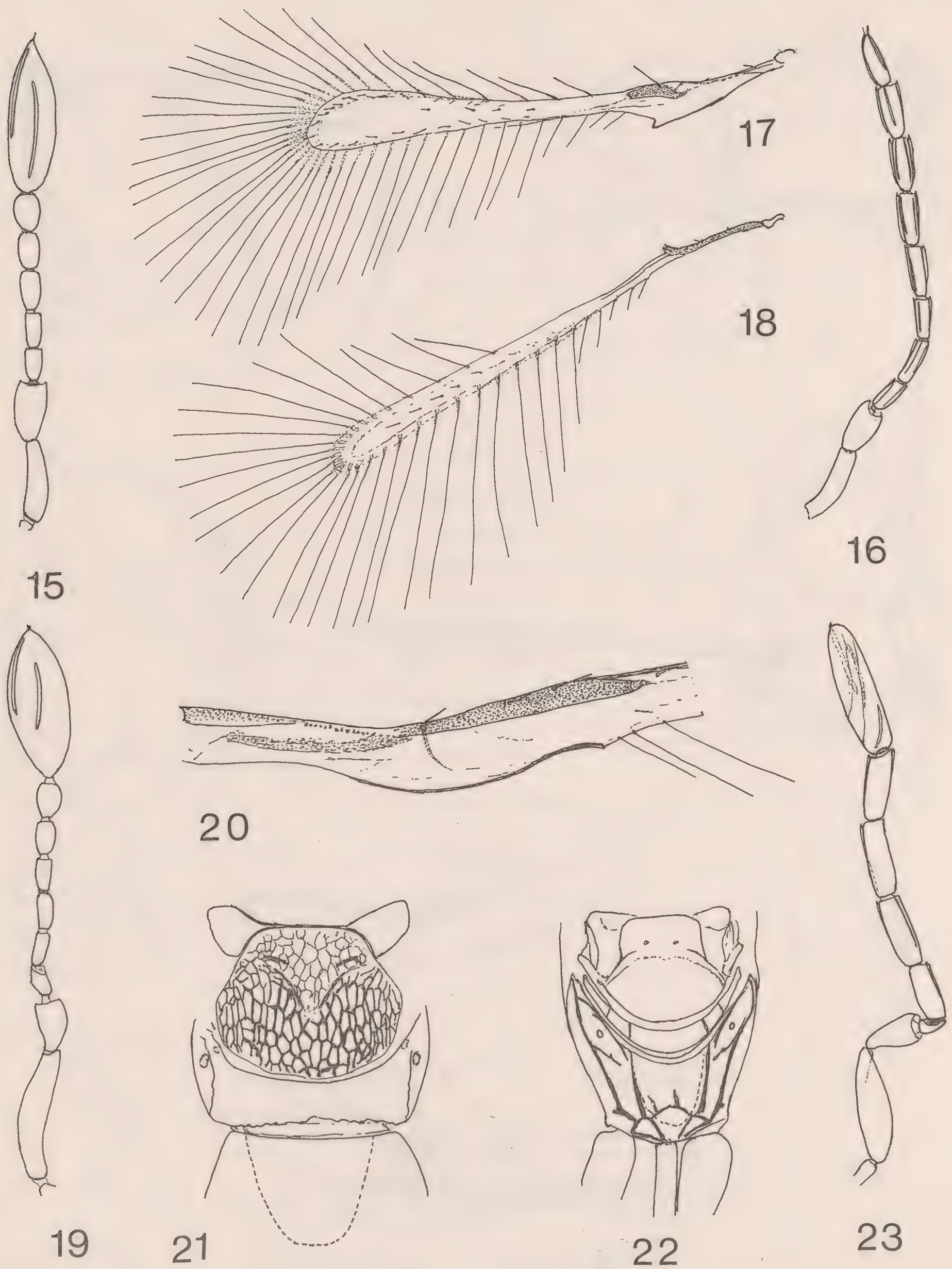
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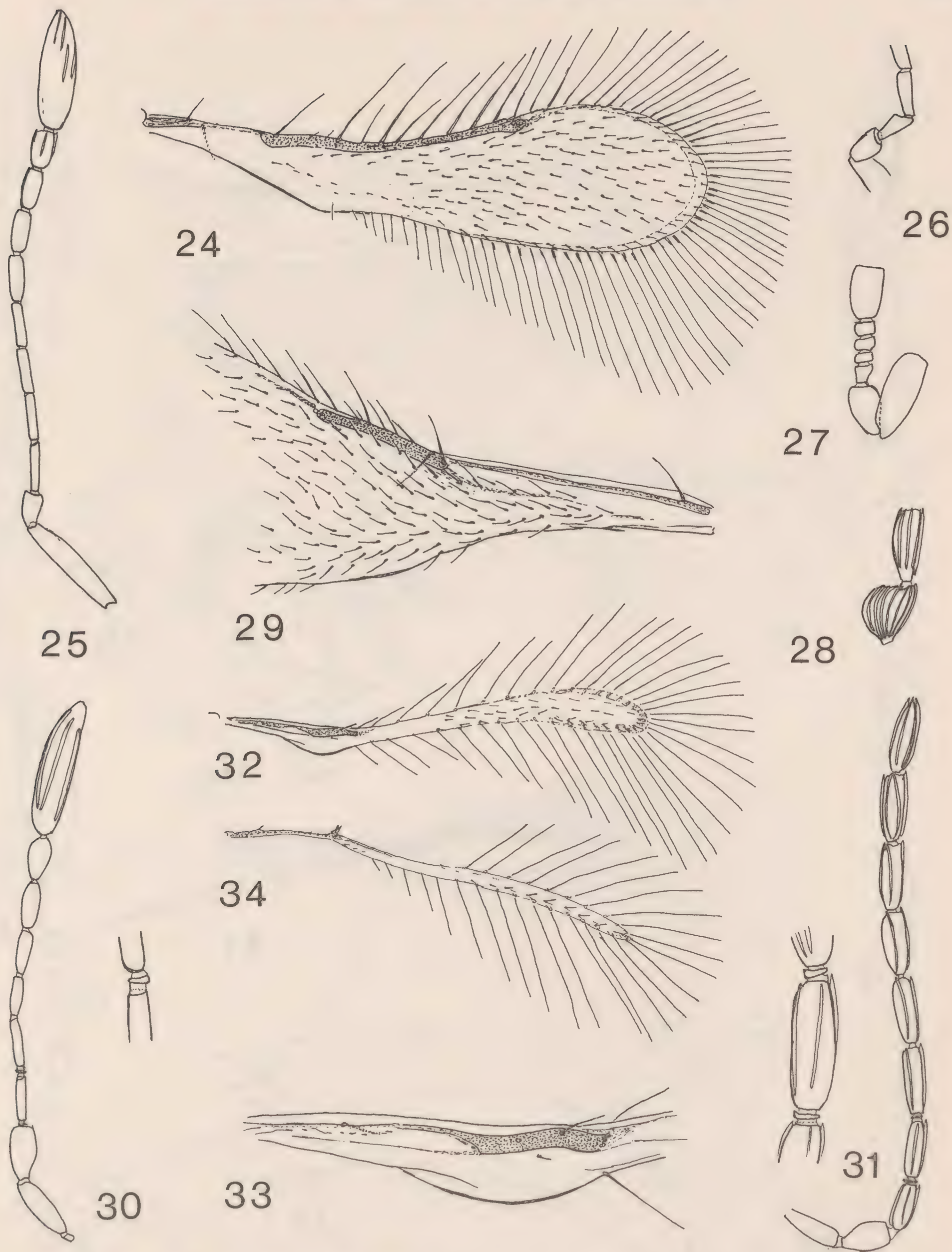
Figs. 1-5. 1, Generalized Mymarid, head in frontal view. 2, Generalized mymarid, head dorsum. 3, *Gonatocerus* sp., F, thoracic dorsum. 4, *Acmapolynema bagicha*, F, thoracic dorsum. 5, Generalized mymarid, fore wing venation.



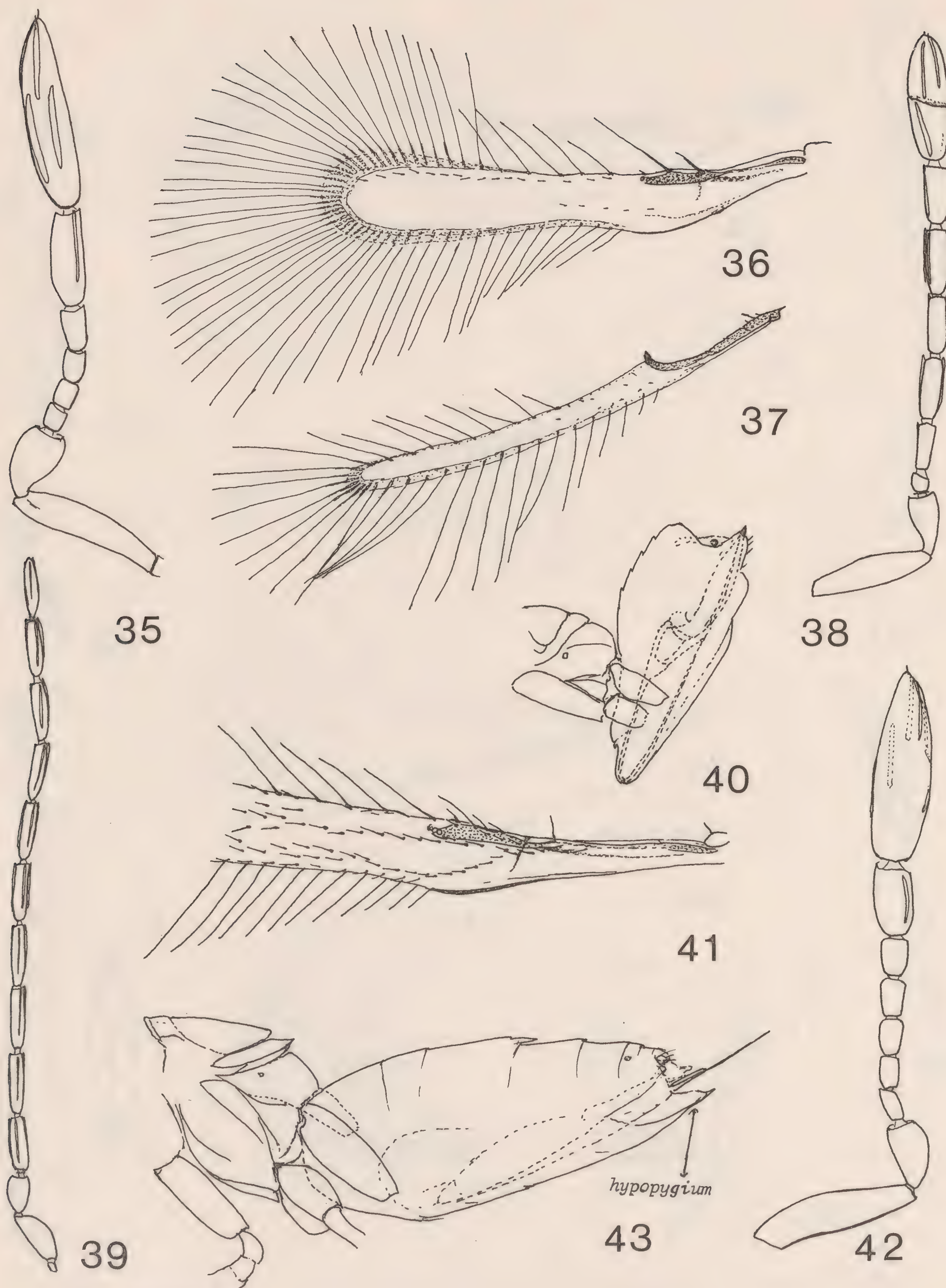
Figs. 6-14. 6,7, *Anagrus optabilis*, F: 6, antenna; 7, basal part of fore wing. 8, *A. flaveolus*, F, thoracic dorsum and base of gaster. 9-12, *Platypatasson fransseni*: 9, head dorsum, F; 10, antenna, F; 11, antenna, M; 12, basal part of fore wing, F. 13,14, *Stethynius triclavatum*, F: 13, last segment of funicle and clava; 14, basal part of fore wing.



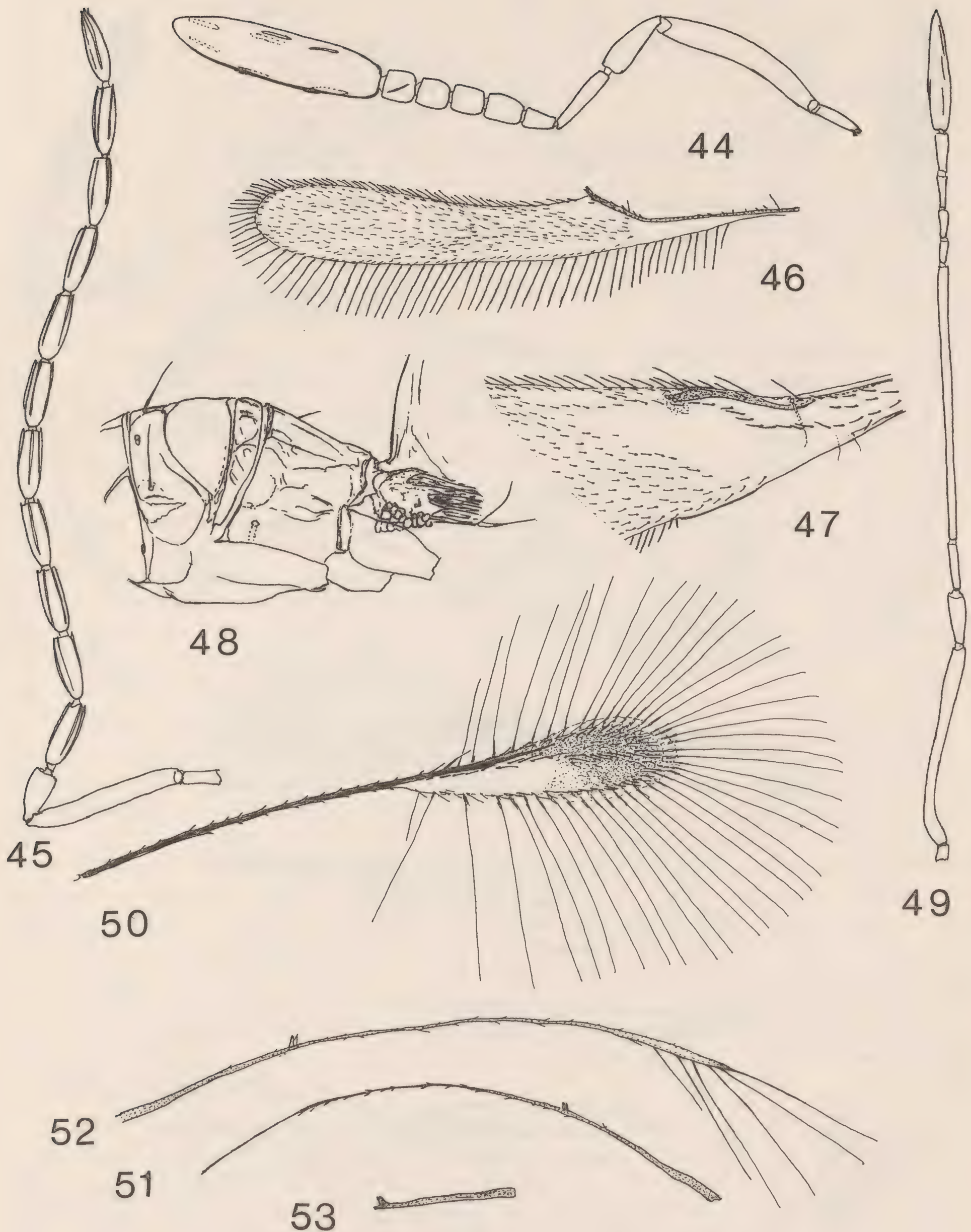
Figs. 15-23. 15-18, *Alaptus antillantus*: 15, antenna, F holotype; 16, antenna, M; 17, fore wing, F; 18, hind wing, F. 19-21. *Litus cynifrons* F: 19, antenna; 20, basal part of fore wing; 21, part of thorax and gaster. 22, *Ooctonus sublaevis*, M, part of thorax and gaster. 23, *Arescon enocki*, F, antenna.



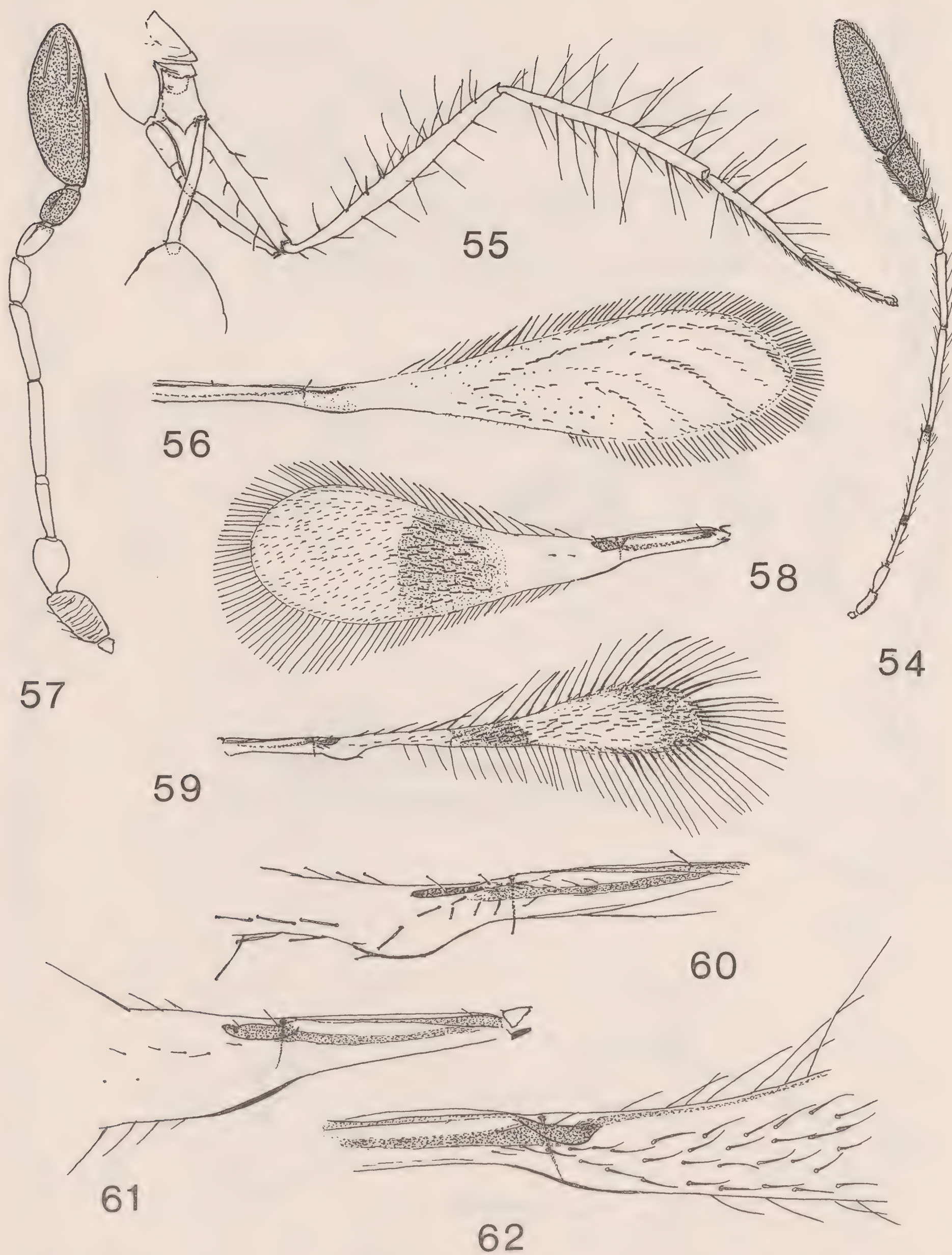
Figs. 24-34. 24, *Arescon enocki*, F, fore wing. 25, *Gonatocerus* sp., F, antenna. 26, *G. shasthryi*, F, pedicel and basal funicle segments. 27, *G. brevifuniculatus*, F, holotype, antenna with distal funicle segments and clava omitted. 28-29, *Gonatocerus* sp.: 28, basal two flagellar segments, M; 29, basal part of fore wing, F. 30-34, *Camptoptera* sp.: 30, antenna with second funicle segment enlarged and shown separately, F; 31, antenna showing ring-like second and fourth flagellar segments, M; 32, fore wing, F; 33, basal part of fore wing, F; 34, hind wing, F.



Figs. 35-43. 35-37, *Parallelaptera* sp., F: 35, antenna; 36, fore wing; 37, hind wing. 38-41, *Patasson* sp.: 38, antenna, F; 39, antenna, M; 40, part of thorax and gaster showing the anteriorly extended inner valvulae; 41, basal part of fore wing, F. 42-43, *Erythmelus helopeltidis*, F: 42, antenna; 43, part of thorax and gaster.



Figs. 44-53. 44-48, *Anagriodea* sp.: 44, antenna, F; 45, antenna, M; 46, hind wing, F; 47, basal part of fore wing, F; 48, part of thorax and gaster. 49-51, *Mymar taprobanicum*, F : 49, antenna; 50, fore wing; 51, hind wing. 52, *M. regalis*, hind wing, F. 53, *M. schwanni*, hind wing, F.



Figs. 54-62. 54-56, *Narayanella* sp., F: 54, antenna; 55, part of body; 56, fore wing. 57-58, *Acropolynema incognita*, F: 57, antenna; 58, fore wing. 59, *A. bagicha*, F, fore wing. 60, *Chaetomymar elisabethae*, F holotype, basal part of fore wing. 61-62, *Polynema* spp., basal part of fore wing in two species, F.